KRASNOYURCHENKO, S.A.

Effectiveness of therapy using mineral water from Mayan (Talitsa).
Vop.kur., fizioter. i lech.fiz. kul't. 23 no.5:456-458 S-O '58
(MIRA 11:11)

1. Glavnyy vrach Talitskoy rayonnoy bol'nitsy Sverdlovskoy
oblasti.
(TALITSA--MINERAL WATERS)

KRASNOZHEN, D.Ye., inzhener; STREL'NIKOVA, A.A., inzhener.

Using recarbonization in the working cycle. Elek.sta. 27 no. 8:48-50 Ag '56. (MLRA 9:10)

(Condensers (Steam)) (Feed water)

SOV/130-58-9-11/23

AUTHOR: Krasnozhen, D.Ye.

TITLE: Operation of Continuous Furnaces with Injection Burners and Low-pressure Burners (Rabota metodicheskikh pechey s inzhektsionnymi gorelkami i s gorelkami nizkogo davleniya)

PERIODICAL: Metallurg, 1958, Nr 9, pp 23 - 25 (USSR)

ABSTRACT: The author indicates that best operation of continuous re-heating furnaces is secured when the combustion is completed in the heating zone, the temperature along the zone does not fall, the direct radiation of heat from the heating into the holding zone should be as small as possible. He describes first the operation of a three-zone furnace (on the 250 mill) with low-pressure burners and needle recuperators. These burners originally of a design produced by Stal'proyekt were found to be inefficient, the standard fuel consumption in 1954 being 81 - 107.5 kg/ton of sound metal and at a firing rate of 250 - 450 kg/h per m^2 of active floor area. In 1955, after the burners had been reconstructed, the corresponding figures were 78-76 and 400. The reconstructed burners (Figure 1) had a reduced gas jet exit area and tangential air feed to give

Card 1/2

SOV/130-58-9-11/23

Operation of Continuous Furnaces with Injection Burners and Low-pressure Burners

greater turbulence. Next, the author describes the operation of three-zone continuous furnaces, Nrs 1 and 2, with ceramic recuperators, built to the designs of Stal'proyekt and provided with Stal'proyekt injection, high-pressure burners. These work well even though the calorific value (1 250-1 300 kcal/m^3) has fallen below the design value of 1 600 kcal/m^3. The positioning of the burners with respect to their firing rates, however, is, the author states, incorrect and mentions that work is proceeding on increasing the firing rates of some of the burners. There are 2 figures.

ASSOCIATION: Stalinskiy metallurgicheskiy zavod (Stalino Metallurgical works

Card 2/2 1. Furnaces--Operation 2. Gas burners--Effectiveness

SOV/130-58-6-8/20

AUTHORS: Krasnozhen, D.Ye., and Moyseyevich, G.I.

TITLE: Operation of Open-hearth Furnaces with Waste-heat Boilers (Rabota martenovskikh pechey s kotlami-utilizatorami)

PERIODICAL: Metallurg, 1958, Nr 6, pp 17 - 20 (USSR).

ABSTRACT: At the Stalino Metallurgical Works, four open-hearth furnaces are followed by four spiral-tube type waste heat boilers with a heating surface of 575 m^2 each. The boilers have a common separator and superheater (the first example of this in the Soviet Union). The authors describe the design and operation of the boiler system (Figure 1), which works with forced circulation by special pumps to produce steam at 12 atm. (absolute) and 350 °C. Early experience showed the unsuitability for the flue-gas system of the D-100/200 fans (made by the "Krasnyy kotel'shchik" Works), mainly because the actual pressure drop in the boiler was found to be greater than calculated. Some improvement was obtained by modifying the system but later these fans were replaced by type D-20 fans rated at 135,000 m^3/hr at 390 mm water and 200 kw which gave a possible flue suction of 100 mm water gauge. The normal gas temperature before the boiler is 400 - 500 °C and it was found necessary to install a special device with type ERV-99 electronic relays to prevent

Card 1/3

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826210(

SOV/130-58-6-8/20

Operation of Open-hearth Furnaces with Waste-heat Boilers

excessive temperatures developing during reversals. Appreciable air leaks have been detected (Table 2) and the authors discuss the importance of these and other factors, showing the suction, temperature and composition of the flue gases at various points of the flue system for Nr 3 furnace. They also give (Figure 3) temperatures and suctions for the whole furnace and boiler system for both flow directions. The boilers were cleaned out every third day and also towards the end of each heat. The authors draw the following conclusions from operating experience at the works: fans should have sufficient reserve to secure high furnace productivity as well as efficient heat utilization; furnace construction should be sufficiently solid so as not to be a limiting factor in making use of fan suction; the waste-heat boilers should be separate units and not share separators and superheaters.

There are 3 figures and 2 tables.

Card 2/3

SOV/130-58-6-8/20

Operation of Open-hearth Furnaces with Waste-heat Boilers

ASSOCIATION: Stalinskiy metallurgicheskiy zavod (Stalino Metallurgical works)

Card 3/3 1. Open hearth furnaces - Operation 2. Boilers - Design

KRASNOZHEN, D. Ye.

18.3200

SOV/1[illegible]-19-[illegible]/29

AUTHORS: Belov, I. V. (Candidate of Technical Sciences), Vil'nyanskiy, I. Ya., Glazkov, P. G., Krasnozhen, D. Ya., Telesov, S. A., Berger, N. I. (Engineers)

TITLE: Delivery of Air to Gas Ports by Fan to Intensify the Melting Process

PERIODICAL: Stal', 1959, Nr 10, pp 889-893 (USSR)

ABSTRACT: Partial combustion of gas in the doghouse occurs by fan-blown air at an approximate pressure of 600-mm water column, improving flame characteristics and drastically cutting power consumption for air blowing (7 to 10 times) in comparison to consumption by compressors or turbo-blowers. Blowing equipment is simple and provides an easy way of controlling air supply. At Stalino and Nizhniye Sergi Metallurgical Plants (Stalinskiy zavod, Nizhne-Serginskiy zavod), fan blowing was installed in 1958. At Stalino Plant, open-hearth furnaces work by

Card 1/4

ASSOCIATION: All-Union Scientific Research Institute of Metallurgical Thermal Technology, Stalino and Nizhniye Sergi Metallurgical Plants (VNIIMT, Stalinskiy i Nizhne-Serginskiy metallurgicheskiye zavody)

KRASNOZHEN, D.Ye., inzh.

Use of evaporative cooling of open-hearth furnaces at the Stalino Metallurgical Plant. Trudy NTO chern. met. 20:328-332 '60. (MIRA 13:10)

1. Stalinskiy metallurgicheskiy zavod.
(Stalino (Stalino Province)--Open-hearth furnaces--Cooling)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826210(

KRASNOZHEN, D.Ye.

Water treatment by smoke gases at the Donetsk Metallurgical Plant. Stal' 22 no.4:371-373 Ap '62. (MIRA 15:5)

1. Donetskiy metallurgicheskiy zavod.
(Donetsk--Iron and steel plants--Water supply)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826210(

KRASNOZHEN, D.

Treatment of the recirculating water by smoke gases of the gas purification cycle. Metallurg 8 no.3:6-8 Mr '63. (MIRA 16:3)

1. Donetskiy metallurgicheskiy zavod.
(Iron and steel plants--Water supply)
(Gases--Purification)

KRASNOZHEN, D.

Utilization of secondary power resources. Prom. energ. 20 no.9: 41 S '65. (MIRA 18:9)

1. Donetskiy metallurgicheskiy zavod.

KRASNOZHEN, E.

New and improved methods of analysis of milk and milk products. I. Determination of dry matter in milk and whey and moisture in curds. E. Krasnozhen. *Union Sci. Research Inst. Molochnaya* ~~Prom. 15, No.~~ (1951).—A method of drying milk, whey, and curds with an infra-red lamp for detg. the dry-matter content, and its advantages over the conventional method are discussed. II. Iodine number of fat. A. I. Gengrinovich (Pharm. Inst., Tashkent). *Ibid.* 20.—A new quant. method for detg. I no. is described as follows: weigh 0.08–0.15 g. drying oil, 0.2–0.4 g. semidrying oil, or 0.4–0.8 g. solid fat into a 200–300-ml. flask with a ground-glass stopper. Add 3–6 ml. of peroxide-free Et_2O and 25 ml. of 0.2*N* soln. of ICl in HCl-acidified distd. water, shake for 1 min., and add 10 ml. of 10% KI soln. and 50 ml. of water per 3 ml. of added Et_2O. Titrate the I_2 with 0.1*N* $Na_2S_2O_3$. When ICl is used the following reaction goes rapidly to completion: RCH:CHR' + ICl → RCHICHClR'. The I no. of lard, cottonseed and fish oils, mutton and beef tallow, and butter fat, as detd. by ICl and Hübl's methods, are given. Within the exptl. error, both methods give the same results. III. Epihydrin aldehyde in milk fat. N. P. Materanskaya and M. Nechaev. *Ibid.* 28–30.—Dissolve 1 g. of oil in 2 ml. of Et_2O in a test tube with a ground-glass stopper and shake up with 1 ml. of chemically pure 37% HCl. Add 2 ml. of 0.1% soln. of phloroglucinol in Et_2O, shake the mixt. thoroughly, place the tube in boiling water for 1–2 sec., cool, and match the aq. layer against a color standard made up of magenta red. It is claimed that Et_2O gives results of good reproducibility. IV. Colorimetric method of determination of phosphorus in milk. N. Kulagina (K. A. Timiryazev Agr. Acad., Moscow). *Ibid.* 30–1.—Evap. 2 g. of milk in water bath; add 1 g. of 1:1 mixt. of Na_2CO_3 and KNO_3 and burn slowly to an ash. Dissolve the ash in 2–3 ml. of 5% HNO_3 soln., filter, wash, and dil. to 100 ml. with water. Transfer 1 ml. of this soln. to a 100-ml. flask, dil. with a small quantity of water, add 10 ml. of 27% H_2SO_4 soln., shake, add 10 ml. of 2% $(NH_4)_2MoO_4$ soln., shake, dil. to 100 ml. with distd. water, mix, and then add 5 drops of $SnCl_2$ reagent. The concn. of P is detd. at the end of 15 min. by measuring the blue color developed with spectrophotometer. To prep. the $SnCl_2$ reagent, dissolve 1 g. of metallic Sn in 25 ml. of concd. HCl and treat with 4 drops of 4% $CuSO_4$ soln. Evap. the soln. to dryness and dissolve the residue in 5 ml. of 27% H_2SO_4. For use, dil. 1 ml. of this stock soln. with 5 ml. of 27% H_2SO_4 and 14 ml. of water. The stock soln. can be stored for a month; the dild. one for 2 days. V. N. K.

MAKAROV, I.P.; KRASNOZHENOV, M.S.; OSTANIN, D.I.

Our methods for the maintenance of tracks with asbestos ballast.
Put' i put. khoz. 7 no.5:18-19 '63. (MIRA 16:7)

1. Chleny Obshchestvennogo konstruktorskogo byuro Ishimskoy distantsii Sverdlovskoy dorogi.
(Railroads--Track) (Ballast (Railroads))

KRASNOZHENOV, Ye.P.; PORFIR'YEV, V.V.

Absorption line profiles in the spectra of novae. Astron.zhur. 37 no.3:589-590 My-Je '60. (MIRA 13:6)

1. L'vovskiy gosudarstvennyy universitet imeni Ivana Franko. (Stars, New--Spectra)

SOV/24-58-6-25/35

AUTHOR: G.F. Krasnozhon (Moscow)

TITLE: Calculation of the Formation of Sand Banks of Water Reservoirs (Rashet formirovaniya otmeley vodokhranilishch)

PERIODICAL: Izvestiya akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 6, pp 126-130 (USSR)

ABSTRACT: After construction of a dam and filling up of a water reservoir a new regime of currents and wave formation is created which disrupts the conditions of stability of the banks. This paper is devoted to calculating the equilibrium profile of the reservoir bank which will ensure for a given wave regime, such conditions of operation which will not result in appreciable disruption of the banks. Decisive factors in the creation of such banks are the wave regime and the characteristics of the drift. On the basis of physical schemes of refraction and transformation of waves and the theory of probability it is now possible to calculate the regime of water reservoirs for deep waters, for shallow waters and for the approach of the waves to the banks. Work on this problem has been published by N.Ye. Kondrat'yev (Ref 1),

Card 1/2

SOV/24-58-6-25/35

Calculation of the Formation of Sand Banks of Water Reservoirs

J.A. Putnam (Ref 2) and A.P. Braslavskiy (Ref 3). It is easy to determine the characteristics of the soils at the banks of future water reservoirs by investigating those sections for which the calculations are made. The author carries out the calculations for the case of a frontal onflow of the waves. It is shown that N.Ye. Kondrat'yev over-simplified the problem. For coarse ground soils the bank can be calculated graphically by applying Eq 14 (p 129), sub-dividing the depth into several intervals and determining for each of these the inclination angles from Eq 17 (p 130).

There are 2 figures and 10 references (6 British, 1 French and 3 Soviet)

SUBMITTED: October 16, 1956

Card 2/2

DYSHKO, Ye.I., kand. tekhn. nauk, red.; KRASNOZHON, G.F., kand. tekhn. nauk, red.;

[Instructions on designing hydraulic structures subject to wave action] Ukazaniia po proektirovaniiu gidrotekhnicheskikh sooruzhenii, podverzhennykh volnovym vozdeistviiam (SN 288-64). Izd. ofitsial'noe. Moskva, Stroiizdat, 1965. 130 p. (MIRA 18:9)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Dyshko). 3. Sovet po problemam vodnogo khozyaystva AN SSSR (for Krasnozhon).

SIDOROVA, A.G.; KRASNOZHON, G.F.

Computation of wind wave parameters in determining the pressure of waves on hydraulic structures. Trudy Okean kom. 9:137-150 '60. (MIRA 14:1)

(Waves)

KRASNOZON, G.F. [Krasnozhon, G.F.], C.Sc.

Calculation of wind waves and off shore shallows of water reservoirs. Vodohosp cas 11 no.1:20-28 '63.

1. Akademia vied SSSR, Komisia pre problemy vodneho hospodarstva, Moskva.

1. KRASNUKHIN, I.

2. USSR (600)

4. Accounting

7. Simplified method of compiling the calculation of norms. Bukhg. uchet 12, no. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826210(

KRASNUKHIN, I.

Journal-voucher accounting system. Grazhd.av. 12 no.2:39 F '55. (MIRA 16:1)

1. Glavnyy bukhgalter Glavnogo upravleniya Grazhdanskogo vozdushnogo flota pri Sovete Ministrov SSSR.
(Airlines--Accounting)

KRASNUKHIN, V. (Rostov-na-Donu)

Observations in the 40 meter band. Radio no.5:18 My '63.
(MIRA 16:5)

(Amateur radio stations) (Radio operators)

Krasnukhin, V.I.

USSR/Cultivated Plants - Fodder.

M.

Abs Jour : Ref Zhur - Biol., No 4, 1958, 15709

Author : V.I. Krasnukhin
Inst : -
Title : ~~Sowing Corn for Ensilage.~~
(O poseve kukuruzy na silos).

Orig Pub : Kukuruza, 1957, No 4, 40-41

Abstract : It is recommended that various methods of sowing be used: the square cluster at 70 x 70 cm and partially the wide-row sowing with 45 cm space between the rows. The harvest of the plot having the wide rows is made in the cob formation stage, and on the plot with square cluster planting in the milky-waxy ripeness stage, which makes it possible to avoid overcharging the work during the time of ensilage without causing any harm to the piled up green stuff.

Card 1/1

KRASNUSHKIN, A.A.

Role of innovators in the building of the Kuybyshev Hydro-electric Power Station. Energ.stroi.no.5:46-55 '58. (MIRA 12:5)

1. Sekretar' Partkoma Kuybyshevgidrostroya.
(Volga Hydroelectric Power Station)

FADEYEV, A.D., kand. ist. nauk; YAKOVLEVA, A.P.; CHERNYKH, N.S., otv. red.; KALASHNIKOVA, P.I., red.; KOGAN, I.B., red.; KRASNUSHKIN, A.A., red.; CHISTYAKOV, V.P., red.; KOZHEVNIKOVA, V.A., red.; DURASOVA, V.M., tekhn. red.

[The V.I.Lenin Volga Hydroelectric Power Station, 1950-1958] Volzhskaia GES imeni V.I.Lenina (1950-1958 gg); dokumenty i materialy. Kuibyshev, Kuibyshevskoe knizhnoe izd-vo, 1963. 407 p. (MIRA 16:7)

1. Kommunisticheskaya partiya Sovetskogo Soyuza. Kuybyshevskiy oblastnoy komitet. Partiynyy arkhiv.. 2. Starshiy prepodavatel' kafedry istorii partii Kuybyshevskogo politekhnicheskogo instituta (for Fadeyev). 3. Nauchnyy sotrudnik partarkhiva Kuybyshevskogo oblastnovo komiteta Kommunisticheskoy partii Sovetskogo Soyuza (for Yakovleva).
(Volga Hydroelectric Power Station (Lenin))

KRASNUSHKIN, A.V.

1/9-RML

4098 AEC-tr-2435((Pt. 1) (p.123-32))
MEASUREMENTS OF THE AVERAGE NUMBER OF NEUTRONS EMITTED IN THE FISSION OF SOME URANIUM AND PLUTONIUM ISOTOPES. PARTS I, II, AND III. V. I. Kalashnikova, A. V. Krasnushkin, V. I. Lebedev, L. A. Mikaelyan, M. I. Pevzner, P. E. Spivak, and V. P. Zakharova. p.123-32 of CONFERENCE OF THE ACADEMY OF SCIENCES OF THE USSR ON THE PEACEFUL USES OF ATOMIC ENERGY, JULY 1-5, 1955. SESSION OF THE DIVISION OF PHYSICAL AND MATHEMATICAL SCIENCES. (Translation). 10p.

This paper was originally abstracted from the Russian and appeared in Nuclear Science Abstracts as NSA 9-7932.

7

RML

KRASNUSHKIN, A.V.

Determining the density of snow, firn, and ice by radioactive logging methods. Merzl.issl. no.2:147-156 '61. (MIRA 16:5)
(Snow--Density) (Ice--Density)

AM4033674 BOOK EXPLOITATION S/

Krasnushkin, P. YE., YAblochkin, N. A.

Theory of propagation of superlong waves (Teoriya rasprostraneniya sverkhdlinny*kh voln) 2d ed., unrev. Moscow, VTs AN SSSR, 63. 0093 p. illus., biblio., 2,150 copies printed. (At head of title: Akademiya nauk SSSR. Matematicheskiy institut im. V. A. Steklova) First ed. published in 1955.

Series note: Gosudarstvenny*y soyuzny*y nauchnoissledovatel'skiy institut. Trudy, v. 4, no. 12

TOPIC TAGS: superlong radio waves, surface wave, electric potential, magnetic potential, normal wave, propagation in atmosphere, propagation in ionosphere, near field, far field, daily variation, homogeneous path, irregular path

PURPOSE AND COVERAGE: This is claimed to be the first conscious attempt to match experimental and theoretical data on long-distance propagation of superlong (wavelengths of several times ten kilometers) waves around the earth. Since there is no probability distribution function for the experimental data, the matching is carried out approximately by the method of mixed initial data, where all the data on the field and on the medium are divided into two groups - reliable and

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AM4033674

unreliable. Several models are proposed for the propagation along the earth's surface and in the ionosphere with an attempt to inclOde all the geophysical factors which influence the far field of superlong radio waves. Only the waveguide channel adjacent to the earth is considered. The method of normal waves which can be used to solve waveguide propagation problems for sound waves in the ocean, infrasound waves in the atmosphere, seismic waves in the earth, etc. is also developed. The first edition was published in 1956.

TABLE OF CONTENTS [abridged]:

AM4033674

SUB CODE: GE, CO SUBMITTED: 10Oct63 NR REF SOV: 010

OTHER: 043 DATE ACQ: 13Feb64

Card 3/3

PROCESSES AND PROPERTIES INDEX

BC

Supersonic absorption in helium. P. KRASNOOSCHKIN and E. PUMPER (Compt. rend. Acad. Sci. U.R.S.S., 1939, 23, 448—449).—Preliminary measurements of the supersonic absorption in He at frequencies from 586 to 952 kHz. indicate that the recorded data for He and Ne are erroneous. The present measurements support the theory of Stokes and Kirchhoff for the absorption of a sound wave by a monat. gas, as do the previous data for A (A., 1939, I, 189).

W. R. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KRASNUSHKIN, P. Ye.

"A Theory of Ultrasonic Interferometer," Dokl. AN SSSR, 27, No.3, 1940

Lab. of Oscillation, Inst. Physics, Moscow State U.

KRASNUSHKIN, P. Ye.

3

Theory of the ultrasonic interferometer. P. R. Krasnushkin. *J. Phys.* (U. S. S. R.) 7, 83-91 (1943).—The classical theory of the Pierce interferometer is criticized. Measurement of phase velocity, spectral distribution and absorption coeff. of ultrasonic radiator are discussed from the point of view of classical theory as well as from that of the new theory which takes into account the lack of uniformity in the distribution of the amplitudes of vibrations over the radiator of the interferometer. Comparative data are given for air, He, and H. F. H. R.

Lab. of Oscillation, Phys. Inst., Moscow State U

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KRA[illegible]AKIN, P. Ye.

2450

534.[illegible]

On the Measurement of Ultra-Sound Absorption in Gases by Spherical Waves Methods. P. Krasnushkin. [illegible] Vol. 14, No. 5, [illegible].— The advantages of using spherical [illegible] instead of plane waves for the measurements are pointed out and the following two new methods proposed: (a) A point receiver is moved along the axis of the central diffraction lobe of the radiation field of a point radiator, and amplitudes V of the field are measured with respect to distance R between the radiator and the receiver. (b) The receiver is replaced by a metallic plane that reflects the waves back to the radiator. With a continuous movement of the plane the acoustic reactance of the radiator and therefore the anode current I_a of the oscillator are varied. A formula determining the relationship between I_a and d (distance between the plane and the radiator) is given.

The results obtained by both methods in room air are shown in a table. It appears that for the frequencies used (400–710 kc/s) α/λ^2 remains constant within 7%, and its average value is 21.7 [illegible] [illegible]; it exceeds by 44% the value given by the classical theory.

Lab. of Vibrations, Physics Inst., Moscow State U.

The Interaction of Oscillating Systems with Distributed Parameters. [illegible] [illegible] 1945, Vol. [illegible] No. [illegible]
A theoretical treatment of the waves travelling [illegible] of one dimensional systems such as parallel [illegible] with [illegible] and more complex [illegible]. Application is made to waveguides and to parallel Lecher systems coupled by inductance coils [illegible] along their length.

Moscow State U.

KRASNOOSHKIN, P.E.

RT-1147 (The method of normal waves as applied to wave guides) Metod normal'nykh voln v primenenii k volnovodam.
VESTNIK MOSKOVSKOGO UNIVERSITETA, 1: 37-55, 1946.

KRASNUSHKIN, A.V.

Selecting a logging tool to determine the density and moisture of rocks using radioactive logging methods. Merzl. issl. no.3:190-197 '63. (MIRA 17:6)

KRASNUSHKIN, P

Krasnooshkin, P. Acoustic and electromagnetic wave guides of complicated shape. Acad. Sci. USSR. J. Phys. 10, 434-445 (1 plate) (1946).

The author discusses the propagation of electromagnetic and acoustical waves in hollow curved pipes of variable rectangular cross-section. These pipes are formed by two parallel planes and two nonintersecting cylindrical surfaces normal to these planes. The problem can therefore be reduced to the consideration of the two-dimensional wave equation. The variations in shape and cross-section are further limited to those plane figures which can be transformed by an analytic function into the longitudinal section of a uniform straight pipe. Finally it is assumed that the wave equation is separable in these transformed variables. The boundary conditions at the edges of the pipe together with one of the resulting ordinary differential equations form a Sturm-Liouville eigenvalue problem. Use is made of this fact in applying the Courant minimax principle to obtain estimates of the eigenvalues. The parabolic, elliptic and toroidal pipes are treated in detail and are, respectively, shown to illustrate tunneling, band-pass properties and clinging phenomena. *R. S. Phillips* (New York, N. Y.).

Source: Mathematical Reviews, Vol 8 No. 7

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

A

AS-3

1882

538.566 : 621.396.11

On clinging of electromagnetic waves to a concave metal surface. [illegible], P. E., AND MUSTEL, E. R. C.R. Acad. Sci. URSS, 50 (No. 3) 211-14 (1946).—Waves from a radiator near a concave surface are, under certain conditions, confined to a thin layer over the surface. This effect was investigated by using as radiator, a cylindrical tube, which ended in a conical horn. The clinging effect persists as the shape of the concave surface is smoothly varied, and occurs so long as the curvature of the surface does not change sign. But at an inflexion the wave separates from the wall and diffraction occurs. The theory of the clinging effect is developed; it compares favourably with the experimental results. L. S. O.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

W.E.
KRASNUSHKIN, P.YE.

Circuits & Circuit Elements

621.392.52 : 1333

Normal Waves in Multipolar Ladder Filters. P. E. Krasnushkin. (*Zh. tekh. Fiz.*, 1947, Vol 17, No 6, pp. 705-722. In Russian.) A filter of the ladder type consisting of an infinite number of sections, each with $(N + 1)$ input and $(N + 1)$ output terminals, is considered (Fig. 1). If an e.m.f. with an arbitrary distribution of complex amplitudes is applied to the filter, then after a time a system of stationary waves will be set up, with the distribution of the amplitudes at the terminals varying from section to section. The question is whether it is possible to select the initial distribution in such a way that it will be repeated without distortion in all subsequent sections. It is shown that for a filter described by the system of equations (1) there are N different distributions and therefore N different normal waves which will pass through the filter without distortion. The effects of the parameters of the sections on the behaviour of normal waves are then investigated and a number of interesting properties are established, such as the change from continuous to damped waves when the frequency is lowered.

1948

KRASNUSHKIN, P. E.

Krasnuškin, P. E. **The method of normal waves with an application to plane-stratified media.** Doklady Akad. Nauk SSSR (N.S.) 56, 687–690 (1947). (Russian)

In this paper there are considered wave phenomena which arise under the action of given currents of density J in an unbounded isotropic nonmagnetic medium, whose dielectric constant ϵ is a function of one coordinate z only. If cylindrical coordinates (r, θ, z) are used, and if it is assumed that the currents are directed along the z-axis and do not depend on the angle θ, then the wave phenomena are described by the scalar differential equation

$$(1)\quad \frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial A}{\partial r}\right)+\epsilon k^2\frac{\partial}{\partial z}\left(\frac{1}{\epsilon k^2}\frac{\partial A}{\partial z}\right)+\epsilon k^2 A=-(4\pi/c)J(r, z),$$

where A is the component of the potential vector A_z, and k is the wave number. Then A is represented in the form of the spectrum

$$(2)\quad A=\sum_i \varphi_i(r)Z_i(z)+\int \varphi(r, X)Z(z, X)dX,$$

where $Z_i(z)$ and $Z(z, X)$ are characteristic functions of the discrete and the continuous parts of the spectrum, and are determined by the equation

$$(3)\quad \epsilon k^2\frac{d}{dz}\left(\frac{1}{\epsilon k^2}\frac{dZ}{dz}\right)+\epsilon k^2 Z+XZ=0$$

under the conditions that the function Z is single valu and continuous. The functions Z are assumed to have be normalized in the usual way. Substituting (2) into (1) an taking into account (3) and the normalization, there result

$$(4)\quad \frac{d}{dr}\left(r\frac{d\varphi}{dr}\right)-Xr\varphi=-(4\pi/c)rJ(r),$$

where $J(r)=\int J(r, z)Z(z)dz$. The solution $\varphi(r)$ of (4) is

$$\varphi(r)=(-i\pi^2/c)\int_0^\infty K(r, \rho)\rho J(\rho)d\rho,$$

where $K(r, \rho)$ is Green's function given by

$$J_0((-X\rho)^{\frac{1}{2}})H_0^{(1)}((-rX)^{\frac{1}{2}}) \text{ if } r>\rho;$$
$$H_0^{(1)}((-X\rho)^{\frac{1}{2}})J_0((-Xr)^{\frac{1}{2}}) \text{ if } r<\rho;$$

J_0 and H_0 are Bessel's and Hankel's functions of order zero.

It is pointed out that the cases of discrete spectra, namely the cases when the medium has the properties of a wave conductor, are of special interest. The simplest case is that of a homogeneous layer with $\epsilon=1$, bounded by perfectly conducting planes. It is shown in this paper that any nonhomogeneous medium, with ϵ a continuous function of z only, possesses the property of a wave conductor whenever the spectrum is discrete. The case of two parallel wave conducting channels is also considered. In this case it is shown that the energy can jump back and forth from one channel to the other. *H. P. Thielman* (Ames, Iowa).

Source: Mathematical Reviews, 1948, Vol 9, No. 4

KRASNUSHKIN, P. Ye.

Krasnushkin ... representation of solutions of the wa... ...tnik Moskov. Univ. 3, no. 6, 73–76 (1948). (Russian)

In the equation $d^2\phi/dz^2+W(z)\phi=0$ let $W(z)$ be an analytic function of z in which z occurs only in the combination $\epsilon^{\frac{1}{2}}z$, where ϵ is a small positive parameter. In order to solve (1) asymptotically for small ϵ the author transforms (1) into a simpler equation $d^2\psi/d\zeta^2+P(\zeta)\psi=0$ by setting $\phi=f^{\frac{1}{2}}\psi$, $dz/d\zeta=f$. The problem of finding $f(z)$ when $P(\zeta)$ is prescribed is solved formally by writing f^2 and ζ as power series in ϵ with indeterminate coefficients that are functions of $\epsilon^{\frac{1}{2}}z$. Then ϕ is calculated approximately by using only the first terms of these series. No complete discussion of the validity of this procedure is given, but conditions are formulated which guarantee the smallness of the second term in the resulting expression for ϕ. A physical interpretation in terms of wave propagation in nonhomogeneous media is added.

W. Wasow (Los Angeles, Calif.).

Source: Mathematical Reviews, 1950 Vol 11 No. 2

USSR/Physics
Wave Guides
Wave Propagation

Apr 1948

"The Wave Guide Properties of Heterogeneous Media," P. Ye. Krasnushkin, 16 pp

"Zhur Tekh Fiz" Vol XVIII, No 4

Applies the half-wave method to the problem of the propagation of waves in flat laminated media and describes studies made to determine approximate method for calculations in cylindrical laminated media. Method is based on representation of the wave field in the form of spectrum of normal wave,

PA 64T98

whose discernible portion is analogous to the spectrum of normal wave in hollow pipes. Submitted 29 Jun 1947. Also submitted for publication in the "Journal of Experimental and Theoretical Physics" 7 Mar 1947.

64T98

KRASNUSHKIN, P. YE.

KRASNUSHKIN, P. YE.

PA 18/49T108

USSR/Physics
Waves, Electromagnetic

Nov 48

"Radiation Through Gaps of Hollow-Space Oscillations as an Analogy of the Tunnel Effect," P. Ye. Krasnushkin, Ye. R. Mustel', 16 pp

"Zhur Tekh Fiz" Vol XVIII, No 11

Studies radiation of electromagnetic waves from an interrecess resonator with external gaps across an orifice. Shows that radiation from the resonator can be treated as an analogy of the quantum-mechanics tunnel effect. Theoretical deduction is corroborated by a series of experiments on electromagnetic waves in centimeter band. Submitted 16 Apr 48.

18/49T108

KRASNUSHKIN, P. YE.

62/49T24

USSR/Electronics
Wave Guides

Aug 49

"Spatial Pulsations in Connected Wave Guides,"
P. Ye. Krasnushkin, R. V. Khoklov, 12 pp

"Zhur Tekh Fiz" Vol XIX, No 8

Theoretically and experimentally investigates spatial pulsations in two semielliptical wave guides connected through a slot. Pulsations are due to the resolution, into doublets, of the natural waves in the isolated wave guides when a slot exists.

[redacted] 62/49T24

KRASNUSHKIN, P.YE.

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6079. **Theory of waves and oscillations in inhomogeneous discrete structures (inhomogeneous wave filters).** P. E. Krasnushkin. *J. Tech. Phys., USSR*, **20**, 1063-83 (*Sept.*, 1950) *In Russian.*

Deals with chain-like structures of members representing oscillation systems with one degree of freedom. Discrete Sturm-type systems are their limiting case when the natural frequencies of all members tend towards zero. Only two limiting cases are considered, viz. loose and tight resonance coupling between elements (or members), and the intermediate range is investigated by excitation methods. For loose coupling and different natural oscillations of the members, all these natural oscillations have localized character. Tightening of the coupling leads to their subsidence according to an exponential law. At the limiting tight coupling the structure becomes periodical and all the oscillations assume collective character, i.e. the same frequency, this being a multiple degeneration process. Owing to interaction of the elements this degeneration disappears and the original frequency is split up into a band if the number of members is infinite. The weakening of the resonance coupling, i.e. a slight deterioration of periodicity, may lead to a distribution of the collective oscillations limited to some bounded intervals and there will be sections of the elements where the collective oscillations appear in the form of exponential "tails." Owing to the standing-wave nature of these oscillations the regions confining them are known as wave barriers. On weakening of the coupling between the elements the barrier regions expand at the expense of the "collectivized" elements and in the limiting case of very loose coupling the collective oscillations degenerate into local ones.

B. F. KRAUS

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KRASNUSHKIN, P.Ye.; KOLESNIKOV, N.I.

Studying the lower ionosphere with the help of an impedance low-frequency radiosonde. Geomag. i aer. 5 no.1:55-69 Ja-F '65.

(MIRA 18:4)

1. Matematicheskiy institut imeni Steklova AN SSSR.

BENDRIKOV, G.A.; KRASNUSHKIN, P.Ye.; REYKHRUDEL', E.M.; POTEMKIN, V.V.; MUSTEL', Ye.R.; RZHEVKIN, K.S.; IVANOV, I.V.; KHARLAMOV, A.A.; TIKHONOV, Yu.V.; STRELKOVA, L.P.; KAPTSOV, L.N.; ORDANOVICH, A.Ye.; KHOKHLOV, R.V.; VORONIN, E.S.; BERESTOVSKIY, G.N.; KRASNOPEVTSEV, Yu.V.; MINAKOVA, I.I.; YASTREBTSEVA, T.N.; SEMENOV, A.A.; VINOGRADOVA, M.B.; KARPEYEV, G.A.; DRACHEV, L.A.; TROFIMOVA, N.B.; SIZOV, V.P.; RZHEVKIN, S.N.; VELIZHANINA, K.A.; NESTEROV, V.S.; SPIVAK, G.V., red.; NOSYREVA, I.A., red.; GEORGIYEVA, G.I., tekhn. red.

[Special practical manual in physics] Spetsial'nyi fizicheskii praktikum. Moskva, Izd-vo Mosk.univ. Vol.1. [Radiophysics and electronics] Radiofizika i elektronika. 1960. 600 p. (MIRA 13:7)

1. Professorsko-prepodavatel'skiy sostav otdeleniya radiofiziki fizicheskogo fakul'teta Moskovskogo gosudarstvennogo universiteta (for all, except Spivak, Nosyreva, Georgiyeva).

(Radioactivity) (Electronics)

BENDRIKOV, G.A.; KRASNUSHKIN, P.Ye.; REYKHRUDEL', E.M.; POTEMKIN, V.V.; MUSTEL', Ye.R.; RZHEVKIN, K.S.; IVANOV, I.V.; KHARLAMOV, A.A.; TIKHONOV, Yu.V.; STRELKOVA, L.P.; KAPTSOV, L.N.; ORDANOVICH, A.Ye.; KHOKHLOV, R.V.; VORONIN, E.S.; BERESTOVSKIY, G.N.; KRASNOPEVTSEV, Yu.V.; MINAKOVA, I.I.; YASTREBTSEVA, T.N.; SEMENOV, A.A.; VINOGRADOVA, M.B.; KARPEYEV, G.A.; DRACHEV, L.A.; TROFIMOVA, N.B.; SIZOV, V.P.; RZHEVKIN, S.N.; VELIZHANINA, K.A.; NESTEROV, V.S.; SPIVAK, G.V., red.; NOSYREVA, I.A., red.; GEORGIYEVA, G.I., tekhn. red.

[Special physics practicum] Spetsial'nyi fizicheskii praktikum. Moskva, Izd-vo Mosk.univ. Vol.1. [Radio physics and electronics] Radiofizika i elektronika. Sost. pod red. G.V.Spivaka. 1960. 600 p.

(MIRA 13:6)

1. Professorsko-prepodavatel'skiy kollektiv fizicheskogo fakul'teta Moskovskogo universiteta im. M.V.Lomonosova (for all except Spivak, Nosyreva, Georgiyeva).
(Radio) (Electronics)

24046
S/020/61/138/004/006/023
B104/B203

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AUTHOR: Krasnushkin, P. Ye.

TITLE: The boundary problem of the propagation of electromagnetic waves in a spherically laminated, anisotropic, dissipative medium

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 813-816

TEXT: In previous papers (Doktorskaya dissertatsiya, Izd. MGU, 1945; Metod normalnykh voln v primenenii k probleme dal'nykh svyazey (Method of normal waves applied to problems of long-distance communications) Izd. MGU, 1947; DAN, 56, no. 7), the author had published the method of normal waves. Here, he studies a general case in direct relation to the semiconducting terrestrial globe surrounded by the magneto-anisotropic ionosphere. This case includes Watson's problem (G. N. Watson, Proc. Roy. Soc, 95a, 83 (1918)) and its acoustic and seismological analogies. The author assumes a steady electromagnetic field of the frequency ω (in spherical coordinates) which generates the current densities

$$I_r(r,\Theta)e^{-i\omega t}; \quad I_\Theta = I_\varphi = 0.$$

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The medium is defined by the tensor of the dielectric constant

$$\|\varepsilon_k\| = \begin{Vmatrix} \varepsilon^k_{rr} & 0 & 0 \\ 0 & \varepsilon^k_{\theta\theta} & \varepsilon^k_{\theta\varphi} \\ 0 & -\varepsilon^k_{\theta\varphi} & \varepsilon^k_{\varphi\varphi} \end{Vmatrix}, \quad k = 0, 1, 2, \ldots, N. \tag{2}$$

and the components of the field satisfy the Maxwell equations

$$\begin{gathered} \frac{1}{r\sin\theta}\frac{\partial}{\partial\theta}(\sin\theta H^k_\varphi) = -\frac{i\omega}{c}\varepsilon^k_{rr}E^k_r + \frac{4\pi}{c}I_r; \quad \frac{1}{r\sin\theta}\frac{\partial}{\partial\theta}(\sin\theta\cdot E^k_\varphi) = \frac{i\omega}{c}H^k_r, \\ \frac{1}{r}\frac{\partial}{\partial r}(rH^k_\varphi) = \frac{i\omega}{c}[\varepsilon^k_{\theta\theta}E^k_\theta + \varepsilon^k_{\theta\varphi}E^k_\varphi]; \quad -\frac{1}{r}\frac{\partial}{\partial r}(rE^k_\varphi) = \frac{i\omega}{c}H^k_\theta; \\ \frac{1}{r}\left[\frac{\partial}{\partial r}(rH^k_\theta) - \frac{\partial H^k_r}{\partial\theta}\right] = \frac{i\omega}{c}[\varepsilon^k_{\theta\varphi}E_\theta - \varepsilon^k_{\varphi\varphi}E^k_\varphi]; \\ \frac{1}{r}\left[\frac{\partial}{\partial r}(rE^k_\theta) - \frac{\partial E^k_r}{\partial\theta}\right] = \frac{i\omega}{c}H^k_\varphi. \end{gathered} \tag{3}$$

At the boundaries of layers, he assumes steadiness of the tangential components of the field. This problem is represented as an operator

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problem. For this purpose, the author introduces the vector function $\begin{vmatrix} B(r, \theta) \\ A(r, \theta) \end{vmatrix}$, where $E_\varphi = \frac{1}{r}\frac{\partial A}{\partial \theta}$; $H_\varphi = \frac{1}{r}\frac{\partial B}{\partial \theta}$. Thus, (3) can be written down in the matrix form

$$l_r^{(k)} \begin{vmatrix} B_k \\ A_k \end{vmatrix} + l_\theta^{(k)} \begin{vmatrix} B_k \\ A_k \end{vmatrix} = \frac{4\pi}{c} r^2 \begin{vmatrix} I_r \\ 0 \end{vmatrix}, \quad k = 0, 1, 2, \ldots, N, \quad (4)$$

where

$$l_r^{(k)} = \begin{vmatrix} \varepsilon_{rr}^k r^2 \frac{\partial}{\partial r}\left[\frac{1}{\varepsilon_{\theta\theta}^k} \cdot\right] + k_0^2 \varepsilon_{rr}^k r^2 \cdot; & -ik_0 \varepsilon_{rr}^k r^2 \frac{\partial}{\partial r}\left[\frac{\varepsilon_{\theta\varphi}^k}{\varepsilon_{\theta\theta}^k} \cdot\right] \\ \frac{ik_0 \varepsilon_{\theta\varphi}^k}{\varepsilon_{\theta\theta}^k} r^2 \frac{\partial}{\partial r} \cdot; & r^2 \frac{\partial^2}{\partial r^2} \cdot + k_0^2 r^2 \left[\varepsilon_{\varphi\varphi}^k + \frac{(\varepsilon_{\theta\varphi}^k)^2}{\varepsilon_{\theta\theta}^k}\right] \cdot \end{vmatrix} \quad (5)$$

$$l_\theta^k = \begin{vmatrix} \mathcal{L} \cdot; & 0 \\ 0; & \mathcal{L} \cdot \end{vmatrix}, \text{ где } \mathcal{L} = \frac{1}{\sin\theta}\frac{\partial}{\partial\theta}\left(\sin\theta \frac{\partial}{\partial\theta} \cdot\right). \quad (6)$$

The corresponding boundary problem is obtained in the form of the inhomogeneous operator equation

$$L_r \begin{vmatrix} B \\ A \end{vmatrix} + L_\theta \begin{vmatrix} B \\ A \end{vmatrix} = \frac{4\pi}{c} r^2 \begin{vmatrix} I_r \end{vmatrix} \quad (10).$$

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With the use of methods developed by the author in previous papers, he represents the solution of (10) with the aid of a theorem by M. V. Keldysh (DAN, 77, 11, (1951)) in the form

$$\begin{vmatrix} B \\ A \end{vmatrix} = \sum_{j=0}^{\infty} \begin{vmatrix} Y_j(r) \\ Z_j(r) \end{vmatrix} \Phi_j(\theta) \qquad (12).$$

With the aid of the Green function, he obtains a general solution which may be given in the form

$$\begin{vmatrix} B \\ A \end{vmatrix} = -\frac{\pi P}{cb^3} \sum_{j=0}^{\infty} \begin{vmatrix} Y_j(r) \\ Z_j(r) \end{vmatrix} \frac{Y_j(b)}{N_j \sin \nu_j \pi} P_{\nu_j} [\cos(\pi - \theta)], \qquad (14')$$

for the case where the field is excited by a Hertzian dipole in the point $\theta = 0$, $r = b$. P is the electric moment of the Hertzian dipole. If P_{ν_j} is decomposed into the sum $\frac{1}{\pi i}\left\{L_{\nu_j}^{(1)}[\cos(\pi-\theta)] - L_{\nu_j}^{(2)}[\cos(\pi-\theta)]\right\}$, and the asymptotic representation

$$L_{\nu_j}^{(1,2)} = Q_{\nu_j} \pm i\frac{\pi}{2} P_{\nu_j} \sim \sqrt{\frac{\pi}{2\nu_j \sin\theta}}\, e^{\pm i[\nu_j^* \theta + \pi/4]}; \quad \nu^* = \nu + \frac{1}{2},$$

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is used, then (14') may be represented in the form

$$\left|\begin{matrix} B \\ A \end{matrix}\right| = \frac{2P}{cb^2}\sqrt{\frac{\pi}{2\sin\theta}}\sum_{l=0}^{\infty}\left|\begin{matrix} Y_l(r) \\ Z_l(r) \end{matrix}\right| \frac{Y_l(b)\,\nu_l^{1/2}}{N_l}\left\{\sum_{n=0}^{\infty} e^{i(n+1)2\pi\nu_l - i(\nu_l^*\theta+\pi/4)} + \right. \left. + e^{i2\pi n\nu_l + i(\nu_l^*\theta+\pi/4)}\right\}, \qquad (15)$$

...

where $1/\sin\nu_j\pi$ is expanded in a geometrical series. Each term of (15) is a normal wave traveling along the layers $\|\varepsilon\| = \text{const}$, and is characterized by the wave number α_j and the damping coefficient β_j. The relation $\nu_j^* = \alpha_j + i\beta_j = \sqrt{\chi_j + 1/4}$ holds for these quantities. Finally, it is shown that a noticeable reflection occurs at the boundaries of the first interval if the dielectric constant changes slowly in the intervals (r_i, r_{i+1}) and strongly in the intervals (r_{i+1}, r_{i+2}) $(i = 0, 2, 4, 6, \ldots)$. The solution of this problem is briefly discussed. There are 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

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24046

The boundary problem of the propagation... S/020/61/138/004/006/023
B104/B203

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences USSR)

PRESENTED: January 9, 1961, by N. N. Bogolyubov, Academician

SUBMITTED: January 5, 1961

Card 6/6

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25308

S/020/61/138/005/008/025
B104/B205

AUTHOR: Krasnushkin, P. Ye.

TITLE: Solution of the boundary problem for the propagation of radio waves around the earth with regard to fundamental geophysical factors

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 5, 1961, 1055-1058

TEXT: The problem under consideration consists in applying the solutions obtained by the author in a previous paper (DAN, 138, 4, 1961). Here, a medium is assumed, which is composed of three spherical layers. The zeroth layer is the Earth ($0 < r < a$) which is given by $\varepsilon_{rr} = \varepsilon_{\theta\theta} = \varepsilon_{\varphi\varphi} = \varepsilon'_0 + i \cdot 4\pi\sigma_0/\omega$, where ε'_0 and the conductivity σ_0 do not depend on r, and $\varepsilon_{\theta\varphi} = 0$. The first layer is assumed to be an ideal atmosphere ($a < r < c$); $\varepsilon_{rr} = \varepsilon_{\theta\theta} = \varepsilon_{\varphi\varphi} = 1$, $\varepsilon_{\theta\varphi} = 0$. The second layer ($c < r < \infty$) is the ionosphere which is considered to be an electron-ion plasma situated in a vertical magnetic field H_0 and characterized by the

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electron concentration $N_e(r)$ and the collision frequency $\nu_{eff}(r)$ of electrons with other particles. The tensor components of the dielectric constant are written for the case wherein only the motion of electrons is taken into account and the compressibility of the plasma may be neglected. The problem under consideration consists in finding steady solutions for the Maxwell equations in $r = o$, $r = a$, $r = c$, and $r = \infty$ under the corresponding conditions. The author assumes that $\varkappa$ has no continuous spectrum, and that no waves come from the center at $r = 0$. On the basis of the previous paper mentioned above, the author gives the operator L_r for normal waves of the case in question. The solutions of these operator equations for the layers 0 and 1 are expressed by means of linear combinations of the spherical Bessel functions $h_\nu^{(1)}(\varrho) = \sqrt{\frac{\pi\varrho}{2}}H_\nu^{(1)}(\varrho)$ and $h_\nu^{(2)}(\varrho) = \sqrt{\frac{\pi\varrho}{2}}H_\nu^{(2)}(\varrho)$. The author obtains $Y^{(1)} = C_1\left\{D_\nu(r,a') - Z_y D_\nu(r,a)\right\} = C_1\overline{D_\nu(r,a')}$ (6), $Z^{(1)} = C_2\left\{\frac{1}{Z_z}D_\nu(r,a') - D_\nu(r,a)\right\} = C_2\overline{D_\nu(r,a)}$ (7), where

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$Z_y = \dot{h}_\nu^{(2)}(k\sqrt{\varepsilon_0}a)/\sqrt{\varepsilon_0}h_\nu^{(2)}(k\sqrt{\varepsilon_0}a)$, $Z_z = \sqrt{\varepsilon_0}\dot{h}_\nu^{(2)}(k\sqrt{\varepsilon_0}a)/h_\nu^{(2)}(k\sqrt{\varepsilon_0}a)$ are the impedances of the earth for vertically (Z_y) and horizontally (Z_z) polarized spherical waves, and where

$$D_\nu(x, y) = \frac{i}{2}\begin{vmatrix} h_\nu^{(1)}(kx) & h_\nu^{(2)}(kx) \\ h_\nu^{(1)}(ky) & h_\nu^{(2)}(ky) \end{vmatrix}; \quad D_\nu(x, y') = \frac{i}{2}\begin{vmatrix} h_\nu^{(1)}(kx) & h_\nu^{(2)}(kx) \\ \dot{h}_\nu^{(1)}(ky) & \dot{h}_\nu^{(2)}(ky) \end{vmatrix};$$

$$D_\nu(x', y) = \frac{i}{2}\begin{vmatrix} \dot{h}_\nu^{(1)}(kx) & \dot{h}_\nu^{(2)}(kx) \\ h_\nu^{(1)}(ky) & h_\nu^{(2)}(ky) \end{vmatrix}; D_\nu(x', y') = \frac{i}{2}\begin{vmatrix} \dot{h}_\nu^{(1)}(kx) & \dot{h}_\nu^{(2)}(kx) \\ \dot{h}_\nu^{(1)}(ky) & \dot{h}_\nu^{(2)}(ky) \end{vmatrix} \quad (5)$$

holds for D_ν. In layer 2 there exist four independent solutions. In the range $r > d$ they may be represented as traveling waves in the directions $r \longrightarrow 0$ and $r \longrightarrow \infty$: as ordinary and extraordinary waves. The solutions read: $Y^{(2)}(r,\chi) = C_3Y_e(r,\chi) + C_4Y_o(r,\chi)$ (8) and $Z^{(2)}(r,\chi) = C_3Z_e(r,\chi) + C_4Z_o(r,\chi)$ (9). Subscript o refers to ordinary waves, and subscript e to extraordinary waves. Concrete forms of (8) and (9) for arbitrary functions $N_e(r)$ and $\nu(r)$, in a region where both waves interact, have been obtained by numerical integration on a computer. If proper conditions are chosen for the point $r_1 = c$, the representation of (6), (7), and (8), (9) in eigenfunctions of the operator L_r will yield equations for the calculation of C_1, C_2, C_3, and C_4. The condition of compatibility of these equations can be written in the form

$$\left[k\overline{D_{\nu_j}(a', c')} - l_y^e \overline{D_{\nu_j}(a', c)}\right]\left[k\overline{D_{\nu_j}(a, c')} - l_z^o \overline{D_{\nu_j}(a, c)}\right] - \frac{\varkappa^e}{\varkappa^o}\left[k\overline{D_{\nu_j}(a', c)} - l_y^o \overline{D_{\nu_j}(a', c)}\right]\left[k\overline{D_{\nu_j}(a, c')} - l_z^e \overline{D_{\nu_j}(a, c)}\right] = 0, \qquad (10)$$

with the notation

$$l_y^e = (\tilde{Y}_e/Y_e)_{r=c}, \quad l_z^e = (\dot{Z}_e/Z_e)_{r=c}, \quad \varkappa^e = (Z_e/Y_e)_{r=c},$$
$$l_y^o = (\tilde{Y}_o/Y_o)_{r=c}, \quad l_z^o = (\dot{Z}_o/Z_o)_{r=c}, \quad \varkappa^o = (Z_o/Y_o)_{r=c}. \qquad (11).$$

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I_1^k are the wave impedances, and $\varkappa^k$ the polarization coefficients of the respective waves at the boundary r = c. These six quantities are functions of λ, and determine the reflection properties of layer 2 completely. Along with Z_y and Z_z, they determine all parameters ν_j, N_j, and $\varkappa_j$ of normal waves. The wave numbers ν_j are roots of the transcendental equations (10), and the coefficients $\varkappa_j$ can be obtained from

$$\varkappa_j = k\varkappa^s \frac{I_z^s - I_z^0}{I_y^s - I_y^0} \frac{k\overline{D_{\nu_j}(c', a')} - I_y^0 \overline{D_{\nu_j}(c, a')}}{k\overline{D_{\nu_j}(c', a)} - I_z^0 \overline{D_{\nu_j}(c, a)}} . \qquad (12).$$

The latter relation was determined from the boundary conditions on the boundaries of the layer. The normalization factor N_j can be represented in the form $N_j = C_1^2 \frac{\overline{D_{\nu_j}(a', c)}}{2\nu_j + 1} \left[\frac{\partial f(\nu)}{\partial \nu}\right]_{\nu = \nu_j}$, where f(ν) is the left-hand side of

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Eq. (10). Thus, it is possible to represent the expressions for the potentials B and A, indicated in the previous paper by (14'), in the form

$$B = -\frac{\pi P}{cb^2}\sum_{l=0}^{\infty}\frac{\overline{D_{\nu_l}(r, a')}\,\overline{D_{\nu_l}(b, a')}\,(2\nu_l+1)}{\sin\nu_l\pi\cdot\overline{D_{\nu_l}(c, a')}\,[\partial f/\partial\nu]_{\nu_l}}P_{\nu_l}[\cos(\pi-0)]; \quad (14) \text{ and}$$

$$A = -\frac{\pi P}{cb^2}\sum_{l=0}^{\infty}\frac{\varkappa_l\overline{D_{\nu_l}(r, a)}\,\overline{D_{\nu_l}(b, a')}\,(2\nu_l+1)}{\sin\nu_l\pi\cdot\overline{D_{\nu_l}(c, a')}\,[\partial f/\partial\nu]_{\nu_l}}P_{\nu_l}[\cos(\pi-0)]. \quad (15).$$

Here, P is the electric moment of the Hertzian dipole. Finally, some particular cases are discussed: 1) $H_0 = 0$. 2) The Watson problem (G. N. Watson, Proc. Roy. Soc., 95, 546, (1919); 95a, 83 (1918)). 3) The case of a plane waveguide. 4) The case of diffraction. 5) The Sommerfeld case. There are 12 references: 7 Soviet-bloc and 5 non-Soviet-bloc. The references to English-language publications read as follows: H. Bremer, Terrestrial Radiowaves, 1949; T. L. Eckersley, Proc. Roy. Soc., 132, 83 (1931); 136, 499, (1932); 137, 158, (1932); Eckersley, Millington, Phil.

Card 6/7

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Solution of the boundary problem ... S/020/61/138/005/008/025
B104/B205

Trans. Roy. Soc., p. 273, 10 VI (1938).

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences USSR)

PRESENTED: February 2, 1961, by N. N. Bogolyubov, Academician

SUBMITTED: January 5, 1961

Card 7/7

9,9300 (1344)
16,7000

25476
S/020/61/139/001/008/018
B104/B231

AUTHOR: Krasnushkin, P. Ye.

TITLE: Information theory applied to the problem of propagation of long and superlong circumterrestrial radio waves in the lower layers of the ionosphere (C, D, E)

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 1, 1961, 67 - 70

TEXT: The solution of the boundary value problem

$$\{\Phi_i = f_i(\{a_i^c\}_1^N;\ \{\bar{a}_i^{\text{нс}}\}_{N+1}^{\infty})\}_{i=1}^N;\ \{a_i^c = f_i^{-1}(\{\Phi_i\}_1^N;\ \{\bar{a}_i^{\text{нс}}\}_{N+1}^{\infty})\}_{i=1}^N, \quad (1)$$

$$\{\Phi_i^{\text{я}} = f_i(\{a_i^{c,\text{я}}\}_1^P;\ \{a_i^{c,\text{я}}\}_{P+1}^N;\ \{\bar{a}_i^{\text{нс}}\}_{N+1}^{\infty})\}_{i=1}^R, \quad (2)$$

provides a functional correlation between field and medium. In these equations $\{\Phi_1\}_1^N$ are parameters that determine the essential features of the

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electromagnetic field with regard to the problem under discussion. $\{a_l^c\}_1^N$ determine the essential and $\{a_l\}_{N+1}^{\infty}$ the unessential parameters of the medium. Expansion for the latter two parameters leads to the introduction of ε-nets in the space of $H_{\Phi N}$, $\{\Phi_i\}_1^N \in H_{\Phi N}^1$, where ε defines the accuracy of idealization. The coordination problem of experimental data $\{\Phi_i\}_1^N$ and $\{a_l^c\}_1^N$ in the ε-net units consists in the superposition of function (1) on the arguments of the probability distribution function $W_{exp}\left[\{\Phi\}_1^N, \{a_l^c\}\right]$. In accordance with the information theory, this leads to gaining an information on field and medium. The method of mixed initial data is employed for approximate coordination. Further highly complicated considerations of the author are based on his two previous papers (DAN, 138, no. 4, (1961); DAN, 138, no. 5, (1961) and deal with methods of finding $\{a_l^{c,x}\}_{P+1}^N$ and $\{\Phi_i^x\}_{R+1}^N$ from (1) and (2). For $f < 100$ kc/sec the parameters $\nu_{j,k}$ and $N_{j,k}$ of TH_j and TE_k normal

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S/020/61/139/001/008/018
B104/B231

waves are taken as $\{\Phi_i\}_1^N$. This leads to

$$E_r(a, \theta) \cong \sqrt{\frac{W}{\sin\theta}}\, e^{i\frac{\pi}{4}} \left\{ \sum_{j=0}^{n} n_j^2 e^{i\nu_j\theta} + \sum_{k=1}^{m} n_k^2 e^{i\nu_k\theta} \right\} \text{ в } \frac{\mu\text{в}}{\text{м}}. \qquad (3)$$

where $n_{j,k} = 0.1829 \cdot 10^{-20} \nu_{j,k}^{3/4} \lambda(\mathcal{T}/N_{j,k})^{1/2}$, λ denoting the wavelength in kilometers, and W the emitted power in kilowatts. (3) permits $\nu_{j,k}$ and $n_{j,k}$ to be calculated. The results established in the two previous papers as well as present considerations support the conclusion that there is a biunique coordination between $\{\Phi_i\}_1^N$ and $\|\mathcal{E}(r)\|$ in $(a-\delta_1, a+h_0+\delta_2)$ in the accuracy limits of the $\mathcal{E}$-net. With the aid of formulas worked out previously S. P. Lomnev computed the $\{a_1^{c,x}\}_1^R$, which was used for constructing the function $N_e(r)$ shown in Fig. 1 for one summer day in mid-latitudes ($N_e^{C}(r)$) and for one night (6 - 7 hours after sunset) ($N_e^{H}(r)$). The computing was done

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Information theory applied...

by a БЭСМ1 (BESM1) computer of the Vychislitel'nyy tsentr AN SSSR (Computer Center of the AS USSR). The tail of $\tilde{N}_e^{\partial}(r)$ ($57 < n < 67$ km) secures the observable damping of the more remote field for $10 < f < 30$ kc/sec. The tail concerned is not dependent on the solar angle χ; it is shifted in the middle of $\tilde{N}_e^{\partial}$ like log sec χ, and grows with the latitude. This increases damping β_{TH} by a factor of 2.5 - 3. This tail is a stable phenomenon of the ionosphere, and is not related to solar ionization. It is highly probable that it is due to cosmic radiation (as suggested by M. Nicolet). There are 3 figures and 20 references: 11 Soviet-bloc and 9 non-Soviet-bloc. The most important references to English-language publications read as follows: M. Nicolet, Phys. of fluids, 2, 95 (1959; J. Geophys. Res., 65, 1469 (1960). [Abstracter's note: The symbols employed are all taken from the previous papers of the author and papers by M. Nicolet.]

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov, Academy

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S/020/61/13?/001/008/018
B104/B231

Information theory applied...

of Sciences USSR)

PRESENTED: April 3, 1961, by N. N. Bogolyubov, Academician

SUBMITTED: March 15, 1961

X

Card 5/6

KRASNUSHKIN, P.Ye.

Diurnal and seasonal oscillations of a distant field of long radio waves. Dokl. AN SSSR 140 no.4:783-786 O '61. (MIRA 14:9)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR. Predstavleno akademikom I.M.Vinogradovym.
(Ionospheric radio wave propagation)

S/020/62/144/002/016/028
B104/B102

AUTHOR: Krasnushkin, P. Ye.

TITLE: Theory of terrestrial atmospherics

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 2, 1962, 334-337

TEXT: This review article discusses the results of Russian and non-Russian studies, conducted in the years from 1937 to 1960, on atmospheric disturbances of radio reception. There are 3 figures.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR
(Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences USSR)

PRESENTED: December 9, 1961, by I. M. Vinogradov, Academician

SUBMITTED: December 7, 1961

Card 1/1

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826210(

KRASNUSHKIN, P.Ye.; KOLESNIKOV, N.L.

Exploration of the lower ionosphere by means of long radiowaves using low-frequency radiosondes set up on rockets. Discovery of a new ionospheric layer. Dokl. AN SSSRR 146 no.3:596-599 S '62. (MIRA 15:10)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR. Predstavleno akademikom I.M.Vinogradovym.
(Atmosphere, Upper--Rocket observations)

KRASNUSHKIN, P.Ye.; YABLOCHKIN, N.A.

[Theory of the propagation of ultralong waves] Teoriia rasprostraneniia sverkhdlinnykh voln. Izd.2., stereotipnoe. Moskva, Vychislitel'nyi tsentr AN SSSR, 1963. 93 p. (Trudy Gosudarstvennogo Soiuznogo nauchno-issledovatel'skogo instituta , no.4(12)) (MIRA 18:6)

KRASNUSHKIN, P.Ye.

Generalized normal waves in chain structures. Dokl. AN SSSR
155 no. 5:1042-1045 Ap '64. (MIRA 17:5)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR.
Predstavleno akademikom N.N.Bogolyubovym.

L 20286-65 EWT(1)/EEC-4/EWA(h) Peb AFETR/RAEM(a)

ACCESSION NR: AP4049914 S/0020/64/159/003/0528/0531

AUTHORS: Krasnushkin, P. Ye.; Lomnev, S. P.; Tragov, A. G.

TITLE: Method for precision calculations of a periodic sectionalized waveguide

SOURCE: AN SSSR. Doklady*, v. 159, no. 3, 1964, 528-531

TOPIC TAGS: periodic waveguide, waveguide calculation, waveguide propagation, normal propagation mode

ABSTRACT: The exact calculation of a periodic sectionalized waveguide is based on the determination of the parameters of a limited number of lowest normal modes propagating in the waveguide, as described elsewhere by one of the authors (Krasnushkin, Radiotekhn. i elektronika, in press). The method consists of writing down the Breisig operator equation of each unit section in the periodic waveguide, and replacing the functional operators in the equation with

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ACCESSION NR: AP4049914

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matrix operators by means of some system of basis functions. The method is illustrated by means of the classical example of propagation of axially symmetric waves in a round diaphragmed waveguide with unit section consisting of a stub of smaller diameter between two stubs of larger diameter. The algebraic equations are solved in this case numerically with an electronic computer accurate to better than 10^{-6}. This report was presented by I. M. Vinogradov. Orig. art. has: 1 figure, 16 formulas, and 1 table.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematics Institute, Academy of Sciences SSSR)

SUBMITTED: 18Jun64

ENCL: 00

SUB CODE: EC

NR REF SOV: 006

OTHER: 004

Card 2/2

L 41562-65 EWT(1)/EWG(v)/FCC/EEC-4/EEC(t)/EWA(h) Po-4/Pe-5/Pq-4/Pae-2/
Peb/Pi-4 GW
ACCESSION NR: AP5005187 UR/0203/65/005/001/0055/0069 47 44 B

AUTHOR: Krasnushkin, P. Ye.; Kolesnikov, N. L.

TITLE: Investigation of the lower ionosphere by the impedance low-frequency radiosonde method

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 1, 1965, 55-69

TOPIC TAGS: ionosphere, radio wave, radiosonde, electron collision, atmospheric pressure, aeronomy, electron concentration, upper atmosphere, Langmuir probe, standard atmosphere

ABSTRACT: A method has been developed for measuring the parameters of the lower ionosphere. It involves recording the input impedance of a small antenna sensitive to changes in the electrical properties of the medium surrounding the antenna. The pole- or T-shaped antenna is mounted on the side surface of a rocket and fed a sinusoidal voltage with a frequency f = 50 kc. The length of the vertical part of the antenna does not exceed 30-50 cm, and the horizontal part of the T-shaped antenna does not exceed 50-60 cm. The antennas are made of copper tubes 1.5 cm in diameter. The method has been named the low-frequency, impedance, radiosonde method,

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ACCESSION NR: AP5005187

and its principles are described fully. The method was employed at a frequency of 50 kc for measuring the electron concentration and transport frequency of collision between electrons and neutral molecules in the height range of 55—90 km. The results agree with those obtained, using long and very long waves, by the differential absorption method and also by high-frequency and Langmuir probes. Transport frequency of collisions was used to determine atmospheric pressure in the height range of 79—90 km. It is shown that the method can be used with a single frequency for measuring vertical $N_e(h)$ profiles in the height range of 50—90 km at any time and $\nu(h)$ in the range 70—90 km during the daytime. The proposed method for measuring pressure from ν_{tr}, in contrast to ν_{eff}, is not dependent on frequency and satisfactorily explains the attenuation of radio waves in the lower layers of the ionosphere. A formula is presented making it possible to determine the pressure profile $P(h)$, which, in summer, coincides with an accuracy of up to 5% with the profile of the standard atmosphere. Orig. art. has: 29 formulas and 7 figures. [08]

ASSOCIATION: Matematicheskiy institut imeni V. A. Steklova AN SSSR (Mathematics Institute, AN SSSR)

SUBMITTED: 14Sept64 ENCL: 00 SUB CODE: ES, EC

NO REF SOV: 012 OTHER: 020 ATD PRESS: 3226

Card 2/2 mlc

KRASNUSHKIN, P.Ye.

Use of a functional net method in a problem on forced oscillations of an electromagnetic field in a volume with complex form. Radiotekh. i elektron. 10 no.7:1214-1225 Jl '65. (MIRA 18:7)

L 40803-65 EWT(d) IJP(c)

ACCESSION NR: AP5007654 S/0020/65/160/006/1285/1288

14
13
B

AUTHORS: Krasnushkin, P. Ye.

TITLE: A method of calculation of a nonuniform iris radio waveguide of finite length

SOURCE: AN SSSR. Doklady, v. 160, no. 6, 1965, 1285-1288

TOPIC TAGS: waveguide iris, Fourier equation, electrodynamic boundary problem

ABSTRACT: Any nonuniform cellular waveguide can be analyzed as a chain of N nonidentical functional cells which transform the amplitude distribution functions of the forced oscillations of the tangential fields $E_{\tau,j}^{(1)}(q)$ and $H_{\tau,j}^{(1)}(q)$, $q \in S^{(1)}(j)$ at the inlet apertures $S^{(1)}(j)$ of the cells to similar functions at the outlet apertures. In order to construct the N-th matrix approximation, these fields are expanded and the basic functions are $\left\{e_{k,j}^{(1,2)}(q)\right\}_{k=1}^{\infty}$ and $\left\{h_{k,j}^{(1,2)}(q)\right\}_{k=1}^{\infty}$, $q \in S^{(1,2)}(j)$. Having taken N first Fourier coefficients of these expansions as the amplitudes assigned to the N poles of the j-th cellular multipole, a chain of 4 N poles was obtained in place of the waveguide. The forced oscillations in the

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chain in a source-form representation are:

$$\left\|\begin{matrix}V(j)\\ I(j)\end{matrix}\right\| e^{i\omega t} = e^{i\omega t}\left\{\sum_{j'=0}^{j-1} G'(j,j')Z_1(j') + \sum_{j'=j}^{R-1} G''(j,j')Z_2(j')\right\}\left\|\begin{matrix}V^0(j')\\ I^0(j')\end{matrix}\right\|, \qquad (1)$$

where V (j) and I (j) are N-dimensional vectors. If the poles of adjacent cells coincide, then

$$\begin{aligned} G'(j,j') &= A(j-1)\ldots A(j'+1)E(j'); \\ G''(j,j') &= A^{-1}(j)\ldots A^{-1}(j'-1)A^{-1}(j'), \end{aligned} \qquad (2)$$

where A (j) is the 2 N x 2 N Brasieg matrix of the j-th cell. The Green matrix operator acts on the vectors of the external voltages V^0 (j') and currents I^0 (j') through the matrices Z_1 and Z_2:

$$Z_1(j') = \begin{pmatrix} Z(R+1,j'+1)\Delta Z^{-1} & -Z(R+1,j'+1)\Delta Z^{-1}Z(0,j'+1) \\ \Delta Z^{-1} & -\Delta Z^{-1}Z(0,j'+1) \end{pmatrix}, \qquad (3)$$

where Z (0, j' + 1) and Z (R + 1, j' + 1) are matrices of the input impedances Z (0) and Z (R + 1) of the end cells recalculated from the ends of the chain to the

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L 40803-65
ACCESSION NR: AP5007654

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section $S^{(1)}$ (j' + 1) and ΔZ = $\tilde{Z}$ (0, j' + 1) + $\tilde{Z}$ (R + 1, j' + 1). Z_2 (j') is obtained from (3) by interchange of the 0 and R + 1 points. With the introduction of Z_1 and Z_2, the pathological properties of the Brasieg matrix at $N \to \infty$ are decontaminated and the boundary conditions for (1) are automatically fulfilled. (1) is true for random cells with matrices A (j') having inverses A^{-1} (j') and for any frequency ω, beside the resonance ω_s, determined from $|\Delta Z| = 0$, the roots of which are independent of j'. For arbitrary cells (1) is expanded in generalized normal waves of rank 2 N. Waves of lesser rank may appear with identical elements, and when all A (j') are equal and Z_1 and Z_2 commute, an expansion is obtained in ordinary normal ways of rank 1. A calculation was made of an axisymmetric forced oscillation of type TH of a nonuniform iris waveguide of a circular cross section. When all $b_j = b$ it can be represented by a chain of cells of two sorts; symmetrical cells with an iris and cells with an iris which are represented by sections of a cylindrical tube. The basic functions of the normal TH waves are expressed by first-order Bessel functions which are described on the basis of a Brasieg matrix which, in turn, depends on the wave number and Kronecker symbol. The components of the vectors of the electrical field coincide with the first boundary problem of electrodynamics. The symmetry force and the cellular identity affect the solution, and in one case the problem is a modification of the dispersion

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L 40803-65
ACCESSION NR: AP5007654

equation of a uniform cellular waveguide. Orig. art. has: 1 figure and 12 equations.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute, Academy of Sciences SSSR)

SUBMITTED: 31Aug64 ENCL: 00 SUB CODE: EC, MA

NO REF SOV: 004 OTHER: 000

Card 4/4

L 43159-66 EWT(1)/FCC GW

ACC NR: AP6018929 SOURCE CODE: UR/0203/66/006/003/0602/0604

AUTHOR: Krasnushkin, P. Ye.

ORG: Mathematical Institute im. V. A. Steklov, AN SSSR (Matematicheskiy institut AN SSSR)

TITLE: Effect of solar wind on the C layer of the Earth's ionosphere

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 3, 1966, 602-604

TOPIC TAGS: solar wind, ionospheric radio wave, primary cosmic ray, solar activity, magnetic storm

ABSTRACT: According to current concepts, an inverse correlation should exist between solar wind variations and the electron concentration in the C layer of the ionosphere. The author confirms this assumption by carrying out an approximate calculation of eleven-year variations of the distant diurnal field of ultralong radio waves propagated around the earth. The calculations are based on data on the modulation of primary cosmic rays by the solar activity. The causes of a brief intensification of the distant diurnal field of ultralong waves, observed approximately one day after a major solar flare associated with a magnetic storm, are also explained by this calculation. It is noted that the discussed phenomena of modulation of ultralong waves by the solar wind may be partially masked by effects taking place during solar flares, such as hard x-ray radiation of 1-10 Å. Orig. art. has: 1 figure.

SUB CODE: 04,03/SUBM DATE: 11Nov65/ ORIG REF: 002/ OTH REF: 007

Card 1/1 MLP UDC: 550.338.2

L 07087-67 EWT(1)

ACC NR: AP6018996 SOURCE CODE: UR/0109/66/011/006/1051/1065

AUTHOR: Krasnushkin, P. Ye.; Lonmev, S. P.

ORG: none

45
B

TITLE: Methods for exact calculation of uniform periodic waveguides 15

SOURCE: Radiotekhnika i elektronika, v. 11, no. 6, 1966, 1051-1065

TOPIC TAGS: waveguide, periodic waveguide, WAVEGUIDE PROPAGATION, DIGITAL COMPUTER SYSTEM

ABSTRACT: Calculation of a periodic "bead-shaped" waveguide consisting of short lengths of cylinders on a digital computer is considered. Known methods of calculating wave numbers and normal-wave shapes are classified into two groups: (A) Those based on solving this equation: $A\left\|\begin{matrix}E_\tau(q)\\ H_\tau(q)\end{matrix}\right\| = \lambda\left\|\begin{matrix}E_\tau(q)\\ H_\tau(q)\end{matrix}\right\|$; in these methods, the frequency ω represents a parameter in the operator A; hence, the dispersion takes the form: $\psi_l(\omega, q, b, c, \ldots)$. and (B) Those based on z-periodicity condition:

$$\left\|\begin{matrix}E_\tau^{(l)}(q,\omega)\\ H_\tau^{(l)}(q,\omega)\end{matrix}\right\|_{z_{BX}} = e^{-i\psi_l}\left\|\begin{matrix}E_\tau^{(l)}(q,\omega)\\ H_\tau^{(l)}(q,\omega)\end{matrix}\right\|_{z_{BblX}=z_{BX}+D},$$

where z is the input coordinate of any

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L 07087-67
ACC NR: AP6018996

"bead." Neither of the above groups can be economically used. Therefore, a combination method (C) is suggested which consists of two steps: (1) An analytical step partitioning the "bead" into several regions separated by interfaces; by solving the first boundary problem for each region, a functional relation, $\{H_j^{(i)}\}_{j=1}^{n} = (Y_{jh}^{(i)})\,\{E_h^{(i)}\}_{h=1}^{n}$, can be established; here, $H_j^{(i)}$ and $E_j^{(i)}$ are the functions of distribution of tangential components of fields H_τ and E_τ over the j-th surface of the region; the above field components are joined at the interfaces of the regions; (2) A computer step which includes truncation of corresponding matrices (scalar products) and calculating them on a digital computer. A modern computer can calculate dispersion curves $\cos\psi_l - f$ quicker than these curves can be measured (difficulties of isolating modes at higher frequencies). Orig. art. has: 4 figures, 16 formulas, and 5 tables.

SUB CODE: 09 / SUBM DATE: 30Dec64 / ORIG REF: 018 / OTH REF: 010

Card 2/2 LC

ACC NR: AP6036754 SOURCE CODE: UR/0020/66/171/001/0061/0064

AUTHOR: Krasnushkin, P. Ye.

ORG: Mathematics Institute im. V. A. Steklov, Academy of Sciences SSSR (Matematicheskiy institut Akademii nauk SSSR)

TITLE: Method of solving the general boundary value problem of the propagation of long and super long radio waves around the earth

SOURCE: AN SSSR. Doklady, v. 171, no. 1, 1966, 61-64

TOPIC TAGS: boundary value problem, radio wave propagation, vlf propagation, ionospheric radio wave, atmospheric electromagnetic effect, approximate solution

ABSTRACT: The problem solved is that of finding the amplitudes of the electric and the magnetic fields produced by a Hertz dipole in an unbounded medium described by Maxwell's equations (in spherical coordinates), having a variable dielectric tensor, and divided into three regions -- the earth, the atmosphere, and the ionosphere. The problems formulated in an approximate differential-operator formulation and is solved by the method of coupled lines, described by the author in his doctoral dissertation (MGU, 1945). The solution is obtained in the form of a sum of modulated normal modes. A method of determining the wave numbers of the modes, suitable for computer solution, is described. The final approximate solution for the boundary value problem is ob-

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ACC NR: AP6036754

tained from the calculated wave numbers and radiation admittances of the different regions. This report was presented by Academician I. M. Vinogradov 18 January 1966. Orig. art. has: 16 formulas.

SUB CODE: 20 , 12/ SUBM DATE: 27Dec65/ ORIG REF: 005/ OTH REF: 007

Card 2/2

ACC NR: AP6036843 SOURCE CODE: UR/0020/66/171/002/0340/0343

AUTHOR: Krasnushkin, P. Ye.; Baybulatov, R. B.

ORG: Mathematics Institute im. V. A. Steklov, Academy of Sciences SSSR (Matematicheskiy institut Akademii nauk SSSR)

TITLE: On the violation of reciprocity principle in daytime propagation of superlong radio waves around the earth

SOURCE: AN SSSR. Doklady, v. 171, no. 2, 1966, 340-343

TOPIC TAGS: radio wave propagation, vlf propagation, waveguide propagation, earth magnetic field, ionospheric radio wave

ABSTRACT: The authors explain a phenomenon, which they call the valve effect, and which consists in the fact that the attenuation of superlong waves on paths from east to west is larger than in the opposite direction, especially during daytime propagation near the geomagnetic equator. Although this phenomenon has not been taken into account in the existing waveguide theory of superlong waves, it is shown that allowance for the valve effect can be made by using a method developed by one of the authors earlier (Krasnushkin, DAN v. 171, no. 1, 1966). This method is used to calculate the impedances contained in the equation for the wave numbers of the normal waves, with account taken not only of the vertical component of the earth's magnetic

 UDC: 538.566

ACC NR: AP6036843

field, but also of the horizontal components along and across the propagation path. It is shown that the parameters of TH waves for arbitrary daytime paths on earth can be calculated with sufficient accuracy by means of the derived impedance equations. The damping coefficients and the differences of the angular wave numbers are electronically computed for TH_1 waves with two types of profiles (medium latitudes in the summer and equatorial zone). In medium latitudes the valve effect is attenuated by the C layer of the ionosphere, which is produced by cosmic rays, and by the decrease in the latitudinal component of the magnetic field. The absence of the C layer in the equatorial zone is also confirmed by the present results. Orig. art. has: 3 figures and 6 formulas.

SUB CODE: 09/ SUBM DATE: 27Dec65/ ORIG REF: 004/ OTH REF: 010

Card 2/2

ACC NR: AP7002193 SOURCE CODE: UR/0203/66/006/006/1051/1060

AUTHOR: Baybulatov, R. B.; Krasnushkin, P. Ye.

ORG: Mathematics Institute im. V. A. Steklov, AN SSSR (Matematicheskiy institut AN SSSR)

TITLE: Determination of the daylight profile of electron concentration of C and D layers of the ionosphere as determined from very long wave fields and atmospheric pressure profiles

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 6, 1966, 1051-1060

TOPIC TAGS: ionospheric electron density, ionospheric radio wave

ABSTRACT: A method optimizing the correlations between low frequency radio waves and ionospheric properties is described. Review of present status of predictions of the electron concentration profiles in the ionosphere is given, showing the weaknesses of present methods. To improve the accuracy of the electron concentration and collision-frequency-of-electrons profiles, use of more accurate data is made. The resulting problem requires very long computation runs due to the large number of iterative steps required. This approach is simplified by recourse to a computational method called the "optimization method" as outlined by Bellman. An example of the summer profile (for temperature latitudes) of the ionosphere consisting of two sub-

UDC: 550.388.2

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ACC NR: AP7002193

layers is given. At the present time equatorial profiles can not be obtained due to insufficient data, although approximate computations show the absence of a C-layer. Several profiles are given for sets of parameters that have been tabulated in the text. The effects of these parameters on the profiles is discussed and the most critical parameters are identified. Orig. art. has: 4 figures, 14 formulas, 1 table.

SUB CODE: 04, ~~20~~ 09/ SUBM DATE: 11Nov65/ ORIG REF: 009/ OTH REF: 015

Card 2/2

KRASNUSHKIN, V.V.

Trends in the utilization of the main types of sulfur-containing raw materials. Khim.prom. no.1:17-20 Ja '64. (MIRA 17:2)

KRASNUSHKIN, V.V.

Development of the basic chemical industry after the May (1958) Plenum of the Central Committee of the CPSU. Khim. prom. no.5:321-327 My '63. (MIRA 16:8)

KRASNUSHKIN, V.V.

Certain problems related to technological progress in the production of phosphate and potassium fertilizers in the U.S.S.R. during the current seven-year plan. Khim-prom. no.3:149-154 Mr '61. (MIRA 14:3)

(Phosphates) (Potassium salts)

KRASNUSHKIN, V.V.

Present state and prospects for the development of the basic chemical industry of the U.S.S.R. Zhur.VKHO 7 no.1:2-9 '62. (MIRA 15:3)

(Chemical industries)

SMYSLOV, N.I.; SIPYAGINA, M.I.; KRASNUSHKIN, V.V.; LEVIN, M.N.

[Combined contact-tower process for sulfuric acid manufacture] Kombinirovannyi kontaktno-bashennyi protsess poluchenia sernoi kisloty. Moskva, 1962. 39 p. (MIRA 16:2)

1. Moscow. Nauchnyy institut po udobreniyam i insektofungisidam. 2. Laboratoriya bashennoy sernoy kisloty Nauchnogo instituta po udobreniyam i insektofungitsidam imeni prof. Ya.V.Samoylova (for Smyslov, Sipyagina). 3. Gosudarstvennyy institut po proyektirovaniyu zavodov osnovnoy khimicheskoy promyshlennosti (for Krasnushkin, Levin).

(Sulfuric acid)

KRASNUSHKIN, Yevgeniy Konstantinovich, prof., zasluzhennyy deyatel' nauki [deceased]; BANSHCHIKOV, V.M., red.; ZINOV'YEV, P.M., red.; KRASNUSHKINA, M.A., red.; GUREVICH, L.A., tekhn.red.

[Selected works] Izbrannye trudy. Moskva, Gos.izd-vo med.lit-ry, Medgiz, 1960. 607 p. (MIRA 13:11)
(PSYCHIATRY)

KRASNY, Dusan, inz. arch.

Construction of suitable gymnasium floors. Poz stavby 12 no. 6:238-241 '64.

1. Czechoslovak Assoication of Physical Education, Section of Design.

KRASNY, F.

Late postraumatic palsy of the ulnar nerve; treatment by anterior transposition. Acta chir. orthop. traum. cech. 18 no.2:41-47 1951.
(CLML 20:9)

1. Of the Orthopedic Department of the State University Hospital at Pilsen (Head—Docent Dusan Polivka, M.D.).

KRASNY, Frantisek, As., Dr.

Synovioplastic sarcoma localized in knee joint region.
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1. Orthopedicak klinika v Plzni, prednosta doc. Dr. D. Polivka.
(SYNOVIOMA, case reports
knee, surg. (Cz))
(KNEE, neoplasms
synovioma, surg. (Cz))